Introduction

USB - Universal Serial Bus

Windows 98 or Windows 95 (limited on some device) and Windows NT5.0 support USB as an external Standard, which provide Plug&Play function for external Hardware Components. The advantage of USB is that all components can be plugged on externally and do not require internal manipulation of the system.

USB-Components

- The Host is normally placed on the mainboard but could be also installed as internal adapter PCI card. The Host controls the complete Data on the Bus but can also work as a Hub itself.
- The Hub provides the connection ports on which a USB device will be connected to. Hubs are responsible to detect devices which are connected or disconnected to the Bus. One Hub can connect max. 4 device which may be powered by the Hub or be supplied by external power supply.
- The USB device is connected to the Bus through an USB cable. USB device can also work as a Hub. I.e. a Monitor which is connected to the computer may also work as a Hub.
  If a USB device is connected first time Windows must start the Enumeration and Detection process for the device. USB allows dynamic and automatic configuration of devices which are physically connected or disconnected to the computer without need to power off the system. The configuration starts immediately when the device is connected or disconnected.

USB Devices:

- Following USB-Devises may be connected to the Computer: Modems, Monitors, Audio devices, Telephone, Speakers, Keyboards, Mouse, Joysticks, Scanner, Printers, Video devices, Digital Cameras, Digitizers. For integrating Telephone Functions USB supports an interface for ISDN and digital Switchboards.

USB - Connectors and cables:

- Connectors for USB are specified by a Standard. The USB Hub uses type-A connector, USB Devices are using type B.

USB - Data Transferrates:

- USB support 4 modes: Interrupt, Control, Bulk and Isochronous. Isochronous- and Interrupt- points reserve band width. For these terminal points the transfer rate guaranteed with a fixed transfer rate. Bulk and Control terminals are using optimal and available bandwidth which are at least reserved with 10% of the total bandwidth. Multimedia requires a guaranteed Data transfer.

  The USB-Host defines the transfer rate and priority which will be assigned to the Data stream. USB support 2 max. rates depending on the requirements of the devices.
- 1,5 MB / sec. for devices which do not need high bandwidth. Mouse etc.
- 12 MBp/s (Isochronous) for devices with need for high bandwidth like modems, speakers, scanner, video devices and printers.

USB - Support for Plug&Play

Plug & Play through USB will be supported by Windows in different ways:

- USB-devices can be connected to the System any time without power off. The USB driver verifies the device and tells the system it is connected.
- USB support Energy Save Mode: On, Suspend and Off. USB-Devices in Suspend Mode are capable to wake up the system. Windows 98 offers a native support for many USB Devices but there will be components which require additional drivers or Software. I.e. those Devices which have been developed after Windows 98 announcement may not be detected automatically.
- The driver and software will be supplied with the Devices. Windows 95 may need in most cases driver SW as at the time of Windows95 was released not many USB devices have been available.

USB - Topology

USB supports maximal up to 5 layers (Root-Hub1-Hub2-Hub3-Gerät), which allows to connect up to 127 devices. Each device is allowed to have max. of 5 meters cable length.

CMC USB - Line

CMC offers with its USB Line several USB devices. These devices comply to the USB Specification 1.1 and are easy to install by their Plug&Play function. Most of the devices will be automatically configured and does not require SW drivers.

The drivers are already provided by the operating system. It is required to use Windows 98 or Windows NT5.0

PCI - USB Steckkarte
PCI Bus Extension board for USB Host mit 2 USB connectors

USB Hub
USB Hub for 1 to 4 USB connectors

USB - Centronics printer cable
USB cable with Centronics printer interface

USB - Computer link
USB Computer link cable

USB Ethernet Adapter
USB Ethernet adapter

USB Modem
V.90 Standard external Modem for USB

USB ISDN Modem
128k external ISDN Modem for USB

USB PC Camera
Digital PC Camera for USB

USB Fingerprint Identity Device
USB Fingerprint Sensor for personal identification
This manual

USB - Fingerprint Identity Device

This USB – Fingerprint ID is a new technology sensor device to scan a person's fingerprint and detect its personal identity by software. The professional terminology is: Biometric Person Identification. This sensor device has substantial advantages against optical scanning devices regarding power consumption and extra security: Cheating by visual copies of fingerprint are almost impossible. Additional features are simple cleaning and small area size. The USB connector is full Plug&Play compatible.

Basic consideration

The identification of a human person by using his fingerprint is known and used for many years in the field of criminal solving and is also juridical established. The fact of none existing identical fingerprints between any two persons in the world distinguish this method from all others of personal identification.

The usage of this silicon sensor technology can replace the so far used optical camera technique which is much more complex and expensive.

Furthermore this method shows substantial security features like preventing cheating by visual fingerprint copies. This fact is the most important feature in non monitored Identification devices.

The function of this sensor is based on a micro condenser matrix which scans the fingerprint. The result is a 3D picture of the fingerprint in a resolution of 256x364 pixels. This picture contains all specific points, ends and junctions of the fingerprint lines. The finger has a capacitive mass and will also be detected by this sensor. It will be difficult to copy and hard to duplicate. This sensor is therefore almost safe against plastic fingerprint copies.

The fingerprint recognition software extracts the so called minuties (endings and bifurcations of finger ridges) from the sensor image and compares it to already stored sets of minuties. One set of minutiaes from one finger needs only about 200 Bytes of storage. The comparison is very fast, so one finger out of thousands can be identified In a short time.

Applications

Normally passwords will be used in computer networking. The administration of many passwords is cost and working intensive. In addition is a password of no security if this password gets known by unauthorized people.
The **Fingerprint ID Device** can solve these problems and can save substantial costs in a large network environment. Furthermore it adds security to the system.

Additional applications are access security, security keys and security encryption of data of all kind.

System requirements

- Pentium Processor
- Windows 98
- 16 MB Memory

Specification

- USB Specification V1.0 compatible
- Power consumption max. 50mA – Supplied by USB connector
- Full Plug&Play Support
- Sensor Resolution 384 x 256 Pnts
- Consumption 0,2 Watt
- Sensor Area 280 mm^2

Installation

Installation overview in 10 steps

Following 10 steps provide an overview of the complete installation of this fingerprint device.The individual steps are described in the pages following this chapter.

Important notice

☞ Befor you start installation make sure you close all open programs including Virus Scanner and Installation Clean Sweep software.

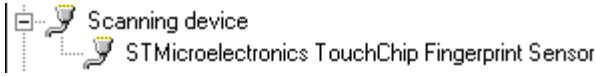
☞ Verify the file 3D-TEXT.SCR is located in your \Windows\system directory. It will be needed for the Screen Saver function,.

1. Connect the USB plug of the sensor to your computer USB connector.
2. Plug & Play capability will request driver software for the finger-print sensor. Start now to install the driver and check when finished if the correct registry entry for the fingerprint device is placed. Rebboot your system.
3. Now you need to install the Ikendi Fingerprint software. Start installation by opening the file IKENDI.EXE from the attached CD in the directory 7D:\IKENDI. (D=CD ROM).
4. Follow the advice of the installation routine. The online sreen will guide you through the next steps. Or follow the chapter Software installation of this manual.
5. While you install the software you will be asked for the first finger print to learn. Adjust the optimal sensor sensivity if you do not have enough quality level. Also the first input will be declared as administrator and asked for the Master Password.
6. Make notice of the Master Password and save it on a secure place. You may need it as emergency login when a device or the system is defective.
7. Use other fingers to learn in in case one finger is injured.
8. Verify reading of fingers before you restart the system.
9. Enable Ikendi Screen Saver to protect your system when powered on and you are away from your desk.
10. Disable access to your Floppy disk if required.

Driver Installation

The USB Sensor needs to install driver software.It has to be done before installing the Ikendi Software. Please follow these instructions for installation:

- Connect the sensor to the USB computer port or Hub
- Plug&Play requires driver diskette for unknown device (Touch Mouse)
- Point to the directory D: \ IKENDI (D: = CD ROM)
- Windows finds file StUSB.INF and loads drivers
- Finish installation and reboot the system
- Verify register entry in device manager for following device:

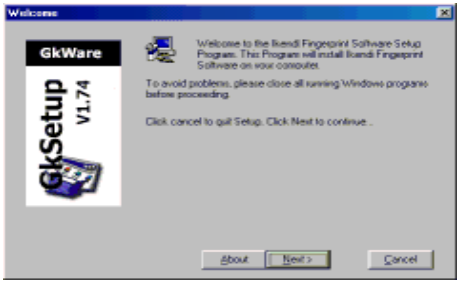


Software Installation

Important Notice

☞ Before you install Ikendi software you need to close all open applications like Virus scanners or installation monitors.

To secure your system by using the Fingerprint ID you need to install the Fingerprint Ikendi Software. Follow the steps as described in the following section.


Welcome
GkWare
GkSetup
V1.74
Welcome to the Ikendi Fingerprint Software Setup Program. This Program will install Ikendi Fingerprint Software on your computer.
To avoid problems, please close all running Windows programs before proceeding.
Click cancel to quit Setup. Click Next to continue.
About
Next >
Cancel

- Click on the file IKENDI.EXE which is placed in the directory D: \ IKENDI (D: = CD ROM). The Installation shield will be opened as shown in the next screen.
- Click on to " Next ". Change optional the directory where to copy to the software and database.
- When detecting the connected Fingerprint device (drivers are installed) the Fingerprint Manager will be opened.
- At the same time the Online Help window opens up to advice how to proceed installation. Follow these steps to the end and click " Finish " installaion.

The individual steps are:

1. During SETUP the Fingerprint Manager will show up. You need to learn one of your fingers to finish installation.
2. Select one of your fingers in the box " Select finger ". Follow the learning process as described on the following pages. You may need to adjust sensitivity in " Settings".
3. After the software have learned the first finger you will be asked for the Master Password. This is necessary for emergency purpose if your system is defective. The first user will be automatically assigned as administrator.

☞ Never reboot the system before you did not enter Master Password.

4. Finish the Setup programm.

☞ Store the Master Password in a save place.
(Passwort has min. 4 characters)

☞ After Installation you should learn additional fingers into the database. This will prevent access denying in case of injured fingers.

- After finishing the Installation, all drivers and software have been loaded and saved. You may find now on the START bar the IKENDI symbol for the silent server.

Ikendi Symbol for Silent Server

- Installation is finished.

Using and setting up the Sensors

The Fingerprint Sensor can be set up by using the installed software. It will protect accessing your system against none authorized persons.

For protection the build in Screensaver of the Windows operating system will be used. Additionally the system will be protected when Windows start up. You may assure this function by preventing the system to boot by Floppy Disk. This must be set up in the mainboard system BIOS .

☞ In Windows environment the screen saver is disabled when Display is in energy save mode !

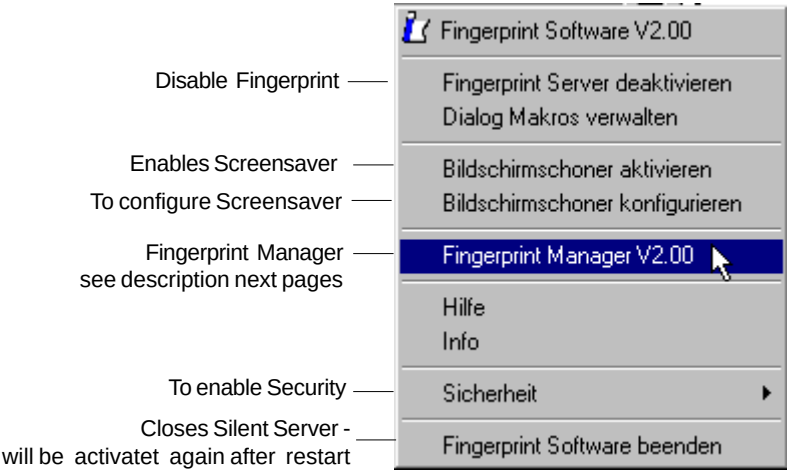
The software offers complete online Help. This manual describes the basic functions. Use the Online Help for additional help.

Ikendi Silent Server

The Ikendi Symbol on the Start bar can be accessed by clicking on with right or left mouse button.

Left mouse button : Calls up screensaver and protects the system.

Right mouse button : Opens Silent Server menu window.



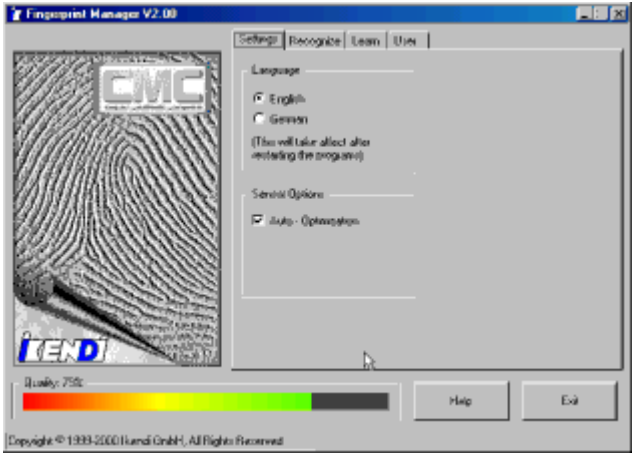
Fingerprint Manager

The Fingerprint Manager includes the functions to setup the sensor and the managment of the database. Additional functions are learning and verifying fingerprints. Open the Fingerprint Manager by using the left mouse button click.

Settings

With the function “Setup“ you may set the language support and the sensibility of the sensor.

To optimize the sensor sensibility you may enable “Auto Optimizing“.

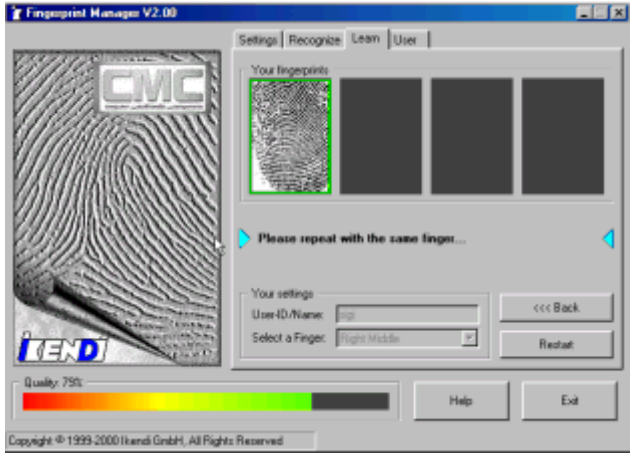


☞ The quality bar should show up green range when placing any finger on the sensor. If any finger can not show green range you may select another one to be used for learning. A certain level of humidity of your finger helps for higher quality level due to its capacitive sensor function.

Learn

The menu "Learn" provides the functions to learn fingerprints and save these to the database. All learned fingers will then have access to the system when the "Silent Server " is activated.

- Enter first the "User ID Name" and select the finger you like to learn.
- Place now the selected finger on to the sensor and wait till the quality level will show up green range. Verify that your finger is placed in straight direction with easy pressure. Lift off and place it four times.
- You need to take four scans and verify the frame of each picture is green color. If the quality of the picture is not good enough the picture frame is red colored. The finger will be only saved to the database if all four frames are green colored.
- After the fourth scan, the selected finger will be added to the database.

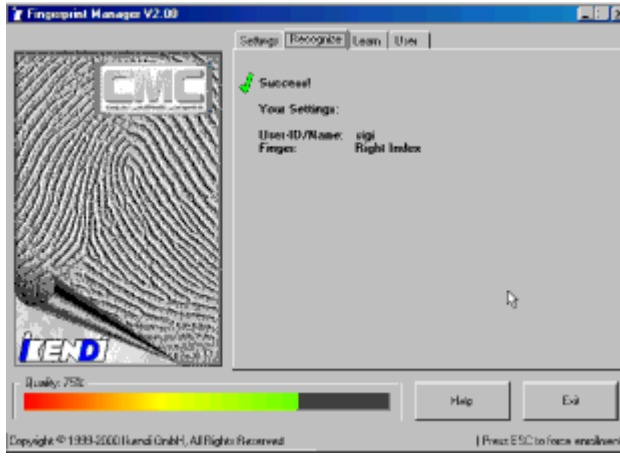


☞ It is recommended to add multible fingers of each hand and each user, to the database. This prevent denying your accessto your system if one of the finger gets injured. Verify each finger is recognized safely with the "Recognize" function..

Recognize

The menu Recognize will be used to verify fingerprints stored in the database.

· Place the finger you want to verify and wait till the quality show up green level. If the fingerprint is stored in the database it will be shown up by User ID and selected finger.



User

To support the user Database the menu “User“ will allow you to delete users from the database. Users and selected fingers can be removed from the database. At least one fingerprint needs to be left .

Securing the System

1. Using the Screensaver

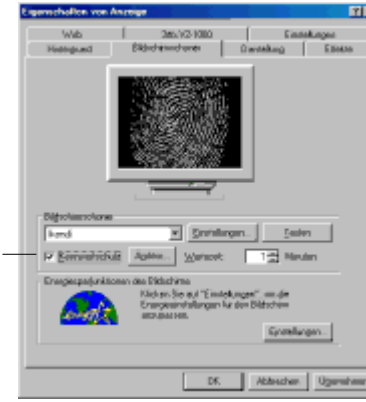
The access to your system will be activated when you use the Screensaver which is embedded in your Windows Operating System.

· Click with right mouse button on to the desktop screen. In next window click on to “Properties“.

· Click then onto Screensaver. Select IKENDI and enable Login Password.

· The system will then activate the Screensaver after the response time you set up. Your system then can only be accessed by one of the finger stored in the database.

Activate Login Password



· Access for Windows while booting up is also secured by the fingerprints stored in the database or by the master password.

☞ Please notice that registration to the system by fingerprint wil be dedicated to the User Ident. If a User want to get access to the system he must be enter is User Name to be recogniued by his fingerprint.

2. Using Windows Login

Access to your System can be controlled using Windows Login proceiture. Each registered User can Login with the fingerprint he learned in. You must therefore enable the Login Security. Open “Silent Server“ and activate “Check User After Login“.

Dialog Macros

Dialog Macros can be used wherever an input from keyboard is required to secure access by fingerprint. Press CTRL same time you put finger onto the sensor and the Macro can be started.

Important informations for unplugging the Sensors

Due to the safety reason of the system the sensor can only be unplugged under certain conditions. Please notice following items listed below to keep your system safe for operation.

1. If the sensor is unplugged the access to your system will be overtaken by the master password.
2. In unplugged condition the Silent Server Logo (see page 8) have changed color to white. When the sensor is plugged in again the Silent Server needs to be reloaded (see page 9). If it will not be reloaded an automatic reload after 10 sec. will take place.

   The Silent Server Logo will then change back to white-blue color which indicates the sensor is in working condition.
3. If you want to replace the sensor by another one please close the Fingerprint Manager window befor you unplug. The new sensor can then be plugged in, but the Silent Server needs to be reloaded or the system rebooted.
4. If the sensor will be unpugged while the Fingerprint manager window is open, you need to reboot the system.

Uninstall

To uninstall Ikendi Software and drivers please use the standard Windows routine for uninstalling Software. Enter “My System-SystemControl-Software“ and select “Ikendi Fingerprint Software“ for Uninstall.
Any deleting, changing or renaming of files related to the security system can cause problems for a safe system operation or can cause emergency diskette to be required.

Additional Security Software

Beyond securing a system by fingerprint access it may be desired to protect and secure individual folders and files for individual users.

For such application the software WinSecure 98 have been developed. A test version is supplied with the attached CD ROM. Install this software using the AUTORUN.EXE program located in the directory D: \ Winsec98. Embedded fingerprint usage is not yet implemented in the trial version. Registration No. for installation 394ADE7B5-0000000000 .

Additionally for security the PGP encryption may be used to protect data files. A PGP Option will be offered soon.

Security criteria

Security of 100% is almost impossible. Therefore limitations for a system need to be considered. I.e. you need to prevent booting from the floppy disk. This can be setup in the Mainboard BIOS.

Maintenance of the Sensor surface.

Clean the sensor surface only with soft fabric. If you scratch the surface the recognition function may not work properly.

Software Update

For Software Update and new Software Tools please check frequently our homepage **:**

www.cmcmedia.de

Trouble Shooting

In case of rising problems or system stall please verify installation regaring following items.

Sensor can not be detected

Verify the registry entry for the fingerprint device in the device manager. See page 8.

Verify in the system BIOS, if the USB Port is enabled. For this port an entry must also exist in the deviec manager.

If the Fingerprint device driver is not installed the device must be recognized when you unplug and plug in the device again. See page 8.

In worst case the device may be defective and need to be replaced.

System hang up or stalled.

Because of the security functions build into this software there will be placed entries into system registry which can not be deleted in any case. In this case the system may hang up or could be stalled. If this happens please follow these instructions:

Try to reboot the system in safe mode. If this is not possible you need to start your system with the emergy diskette or in DOS mode. Delete following files IKSERVER.EXE and IKTRAY.EXE which are located in the directory \Programme\Ikendi Fingerprint Software\Bin

Sensor quality too low or too high.

The sensor works as a capacitive device.

Humidity on the finger (breath or moisten) will increase the sensitivity.

Versa wise a soiled sensor area can automatically increase the sensitivity and a finger is not or hardly recognized. In this case you need to clean the sensor as described on page 15.

For help you can contact us :

E-Mail : info@goodway.com.tw

Telephone : 886 - 2 - 8919 - 1200